

Table 2.12 A summary of measures of disease occurrence.

Measure	Definition	Formula	Units
Prevalence (P)	The <i>proportion</i> of the population with disease at a specific point in time	$\frac{\text{No. people with disease at a given point in time}}{\text{Total number of people in the population}}$	% or proportion (e.g. 0.01) (or per 1,000, 10,000, 100,000 etc.)
Cumulative incidence (CI)	The <i>proportion</i> of people who develop disease during a specified period. Synonyms: <i>Attack Rate</i> , <i>Experimental</i> and <i>Control Event Rate</i> (in the treated and control groups in a clinical trial)	$\frac{\text{No. who develop disease in a specified period}}{\text{No. at risk of the disease at the start of the period}}$	% or proportion (or per 1,000, 10,000, 100,000 etc.)
Incidence rate (IR)	The <i>rate</i> at which disease is occurring, measured from individual data in a study Synonym: <i>Incidence density</i>	$\frac{\text{No. who develop disease in a specified period}}{\text{No. person-years at risk of getting the disease}}$	per 100,000/person-years (or per 1,000, 10,000 person-years etc.)
	The <i>rate</i> at which disease is occurring, measured from population data, may be <i>crude</i> , <i>specific</i> (e.g. age-specific) or <i>standardised</i> (direct standardisation)	$\frac{\text{No. people who develop disease in one year}}{\text{Average no. in the population in the same year}}$	per 100,000/year (or per 1,000, 10,000/year etc.)
Standardised incidence or mortality ratio (SIR / SMR)	Compares incidence or mortality to a standard population using <i>indirect</i> standardisation	$\frac{\text{Observed number of cases (deaths)}}{\text{No. expected for a standard population}}$	A ratio, sometimes a percentage
Proportional mortality ratio (PMR)	Compares the <i>proportion</i> of deaths to a standard population (can be used when information is only available for deaths)	$\frac{\text{Proportion of deaths from a specific cause}}{\text{Proportion expected for a standard population}}$	A ratio, sometimes a percentage
Case–fatality ratio (CFR)	The proportion of people who die from a disease in a specified (usually short) time period (actually a measure of <i>cumulative incidence</i>)	$\frac{\text{No. who die from disease in a specified period}}{\text{Total no. with disease}}$	A percentage (or per 1,000, 10,000, 100,000 etc.)